User Manual

Portable thermal printer

s'print

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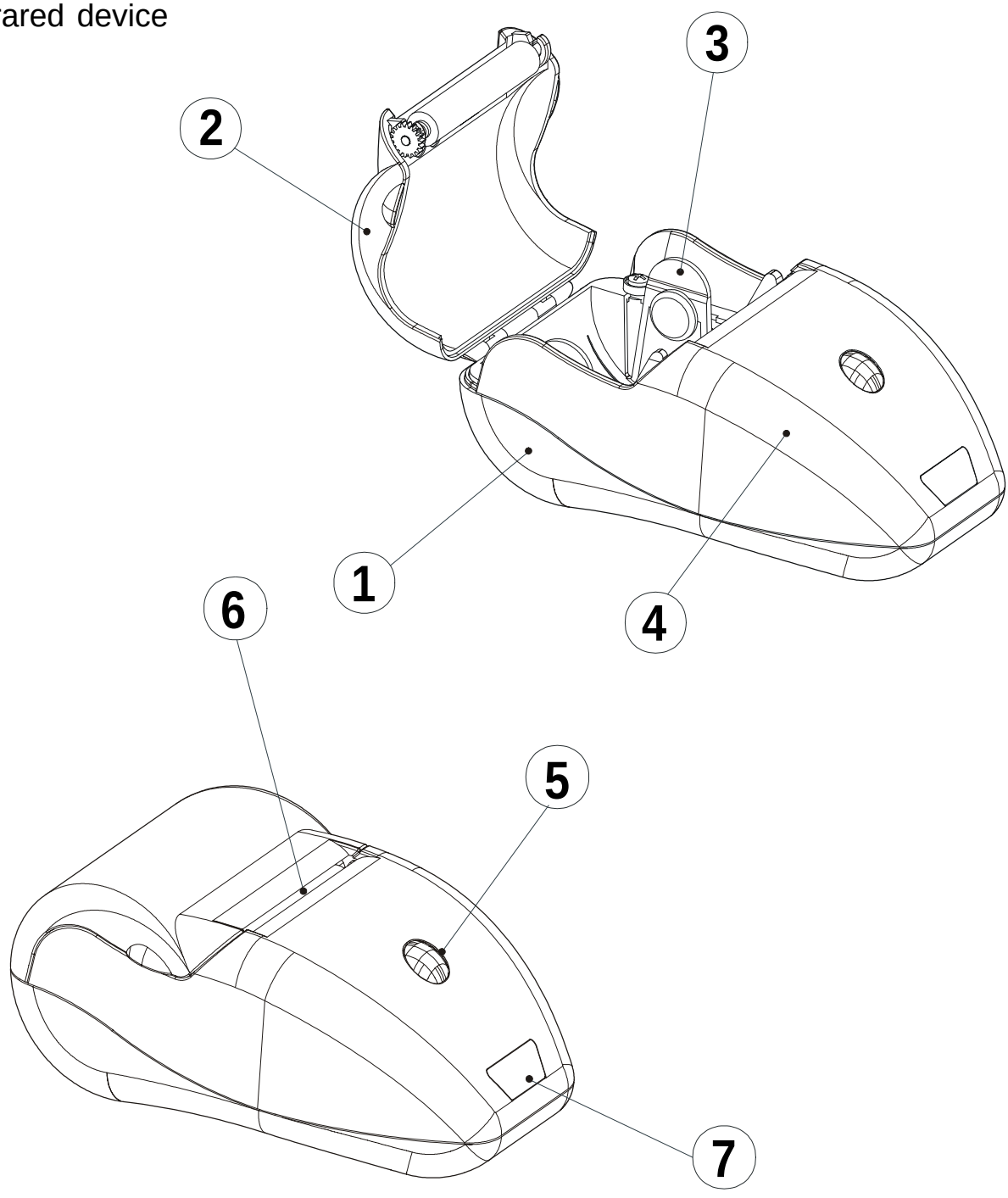
CUSTOM ENGINEERING SPA
Str. Berettine 2 - 43010 Fontevivo (PARMA) - Italy
Phone: +39 0521-680111 - Fax: +39 0521-610701
http:\\www.custom.it http:\\www.smice.com

Customer Service Dept.:
Phone: +39 0521-680163 - Fax: +39 0521-680146
E-mail: support@custom.it

PRINTER COMPONENTS

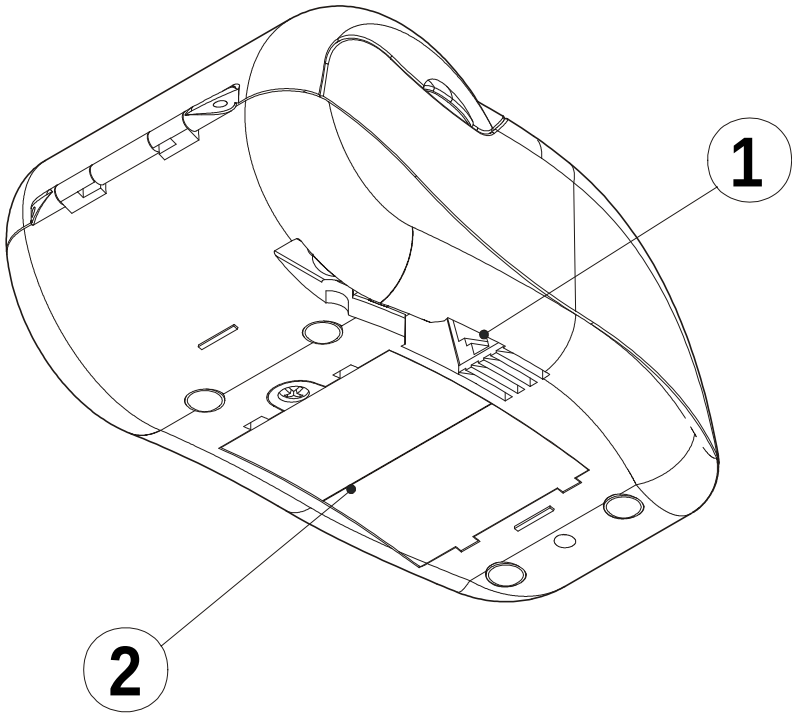
A. DPT100-B – Front external view

1- Printer base
2- Cover
3- Paper holder
4- Printing mechanism
5- Multi-function + ON key
6- Paper exit slot
7- Infrared device



B. DPT100-B – Under view

1- Serial connector and battery recharger
2- Battery compartment



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MANUAL ORGANIZATION

In addition to the Introduction which includes a description of the explanatory notes used in the manual, general safety information, how to unpack the printer and a brief description of the printer including its basic features, this manual is organized as follows:

Chapter 1: Contains the information required for correct printer installation and its proper use, as well as interface specifications

Chapter 2: Contains information on interface specifications

Chapter 3: Contains a description of the printer command set

Chapter 4: Contains Technical Specifications of the printer

Chapter 5: Contains the character sets (fonts) used by the printer

SYMBOL USED IN THIS MANUAL

NOTE
Gives important information or suggestions relative to the use of the printer.

WARNING
Information marked with this symbol must be carefully followed to guard against damaging the printer.

DANGER
Information marked with this symbol must be carefully followed to guard against operator injury or damage.

GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Before cleaning the printer, disconnect the power supply and make sure that the printer is off.
- Clean the printer with a damp cloth. Do not use liquid or spray products.
- Do not operate the printer near water.
- Only use approved accessories and batteries. Do not connect to products that are not compatible.

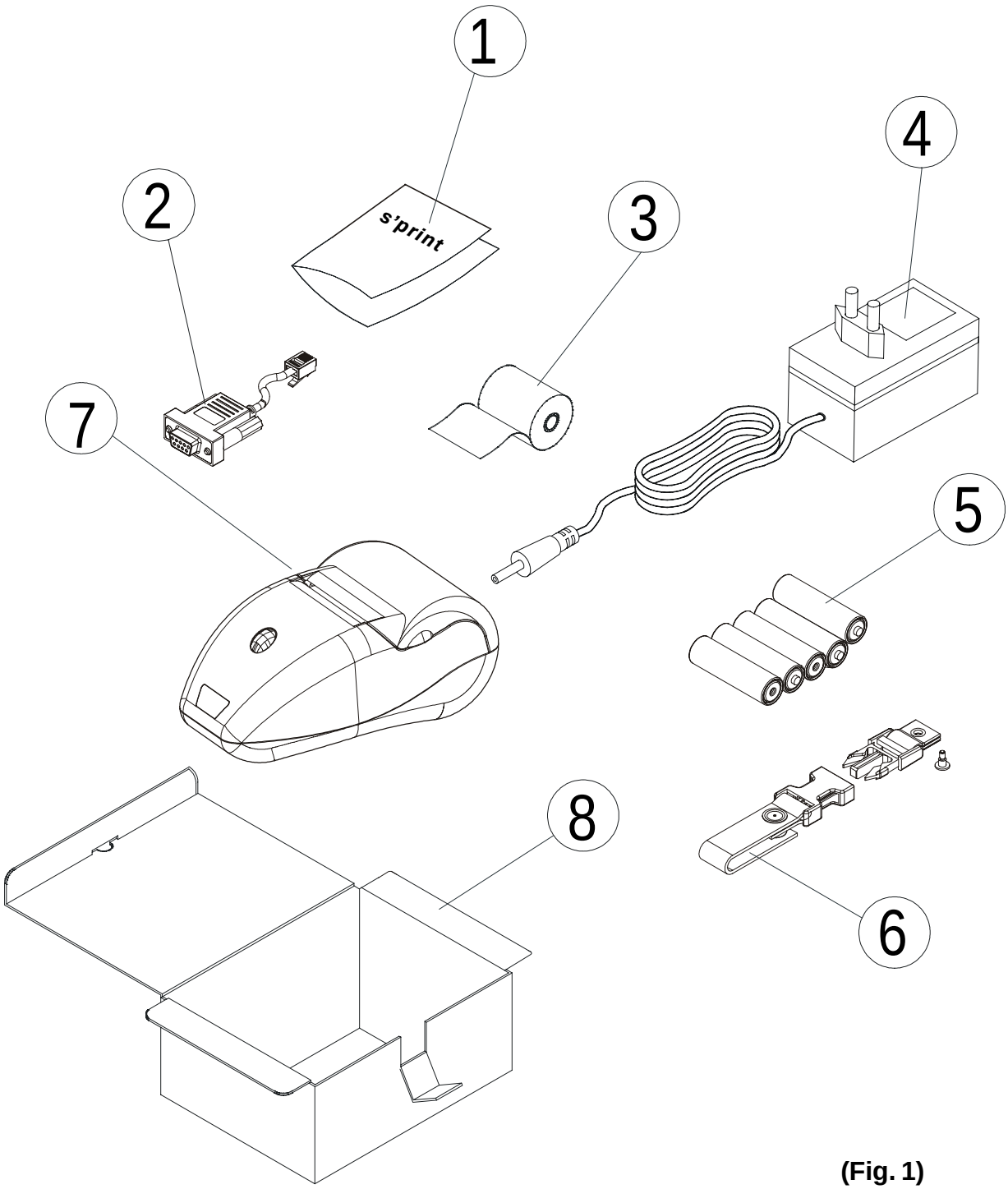
- Use the type of electrical power supply indicated on the printer label. If in doubt, contact your retailer.
- When deciding where to place the printer, make sure it is positioned where its cables will not be damaged.
- Do not introduce foreign objects of any kind into the printer as they could cause a short circuit and could jeopardize printer functioning.
- Do not spill liquids onto the printer.
- Do not carry out technical operations on the printer, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
- Disconnect the printer from the electricity supply and have it repaired by a specialized technician when:
    A. The feed connector has been damaged.
    B. Liquid has seeped inside of the printer.
    C. The printer has been exposed to rain or water.
    D. The printer is not functioning normally despite the fact that all instructions in the users manual have been followed.
    E. The printer has been dropped and its outer casing damaged.
    F. Printer performance is poor.
    G. The printer is not functioning.

UNPACKING THE PRINTER

Remove the printer from its carton being careful not to damage the packing material so that it may be re-used if the printer is to be transported in the future.

Make sure that all the components illustrated in fig. 1 are present and that there are no signs of damage. If there are, contact Customer Service.

1. Warning sheet
2. Cable
3. Paper roll
4. Adaptor / Battery recharger
5. Batteries (5 pcs.)
6. Belt coupler
7. Printer
8. Box



(Fig. 1)

PRINTER FEATURES

The new ***s' print*** portable thermal printer offers an innovative alternative to impact-based systems, with a range of interface options (RS232 serial,R232+IRDA). The printer is powered using batteries.

The **battery version** (with RS232+IRDA interface) is primarily intended for the automatic identification and mobile telephony market, combined with portable terminals without printer; the infrared bidirectional interface with which it is equipped makes cable connection—so “inconvenient” for portable devices—unnecessary.

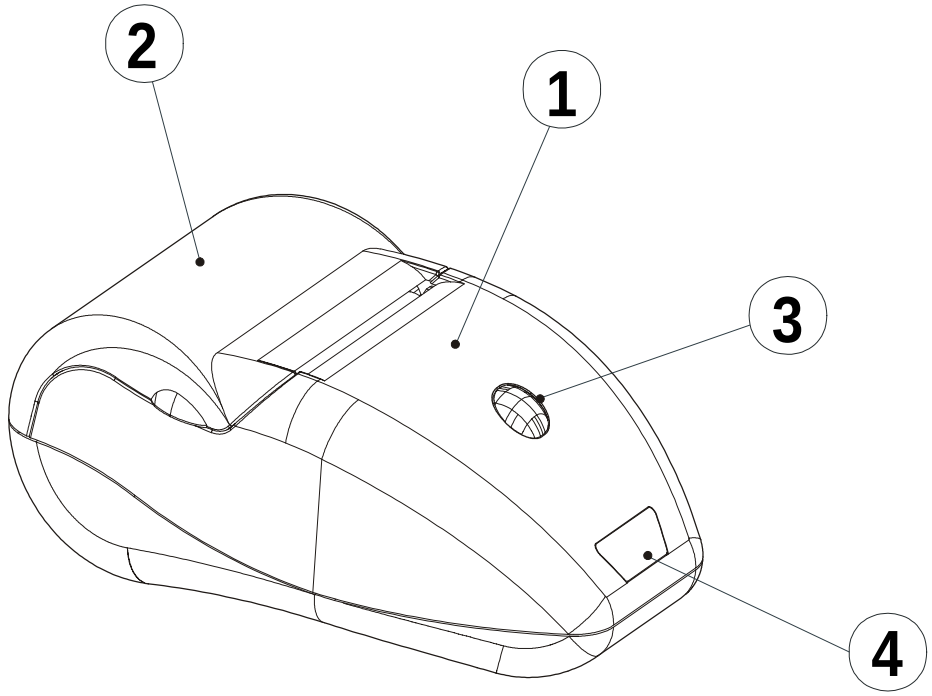
It is important to note that ***s’ print*** is the first Custom printer designed with **“sixload” easy paper load**, making it simpler and more convenient to use.

It has a 203 dpi thermal print mechanism that utilizes 57.5mm-wide paper rolls and can print up to 24 o 40[(1)] charaters per line.

[(1)]NOTE
The 40 column version is downloadable on the Support/Download/ Firmware section from www.custom.it web site.

PRINTER DESCRIPTION

The printers consists of a ABS-V0 casing (1) equipped with a cover (2) under which is housed the paper roll and print mechanism. On the front is the multi-function key (3) and red LED (4).



(Fig. 2)

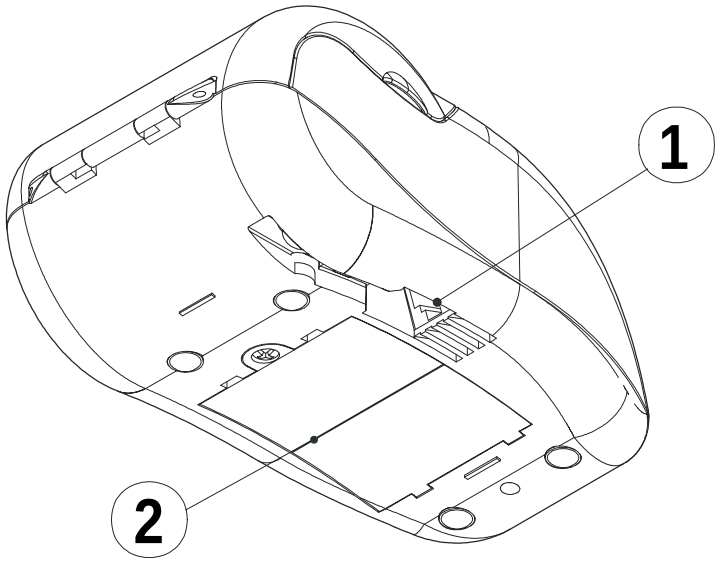
- Multi-function key. This key is used to access a variety of printer options depending on how long it is held down. If the printer is off (red LED off), when this key is pressed power is turned on (blinking red LED). To turn the printer off the key is pressed two times (the LED begins to blink faster) and if it is not pressed again within three seconds the printer shuts off.
  During the power-up phase, if the key is held down for at least three seconds, the printer enters the configuration mode and prints out a printer setup report. When the print-out is complete, the printer remains in stand-by to receive characters from the serial interface that are printed out in hexadecimal code.
  If the key is pressed, the printer by-passes the setup mode and terminates the hexadecimal dump function. Pressing the key quickly will exit the configuration mode, while if it is held down for at least a second, it is possible to make changes in the individual parameters.

- The red LED displays printer operating status and this check is performed “on-line”. Table 1 lists operating statuses and the LED signals connected to them:

(Tab.1)

LED status	Description
Always off	Printer off
Always on	Printer on - no fault with batteries recharging
Very slow blinking (one blink every three seconds)	Printer On - no fault with batteries not recharging
Slow blinking (one blink every second)	Paper Out message
Fast blinking (one blink every half second)	Resettable error (head overheating, battery voltage error)
Very fast blinking (seven blinks per second)	In process of shutting off

1.1 CONNECTIONS

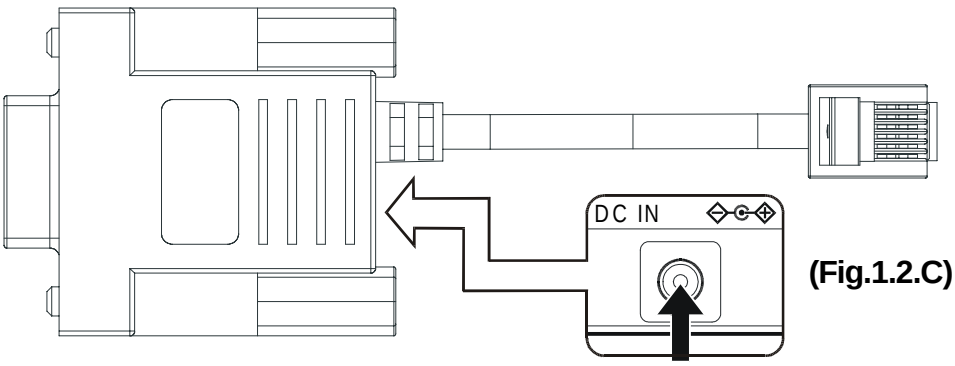


(Fig.1.1)

1.1.1 Battery Recharger

For the Battery Recharger/Power Supply and serial connection, the printer is equipped with a connecting cable (fig. 1.2) that comes packed with the printer and has a double connection system. On one side is a 9-pin female connector (fig. 1.2.A) for the serial port; on the other side of the same connector is a RJ11 connector (fig. 1.2.B) and a jack (fig. 1.2.C) for connection to the battery recharger.
The printer is equipped with a rechargeable battery pack, located in the battery compartment (2), self-sufficient for printing. To recharge the batteries, use the connection cable (fig. 1.2) that comes packed with the printer and following the instructions reported in the 1.2.1 paragraph.

(Fig.1.2.A)



(Fig.1.2.B)

(Fig.1.2.C)

1.1.2 Turning the printer On and Off

How to turn the printer On

- by briefly pressing the multi-function key
- by sending one or more characters over the serial line—it is better to send characters that are not read as printer controls (ex. 0x0E)
- with the battery recharger connected

How to turn the printer Off (1)

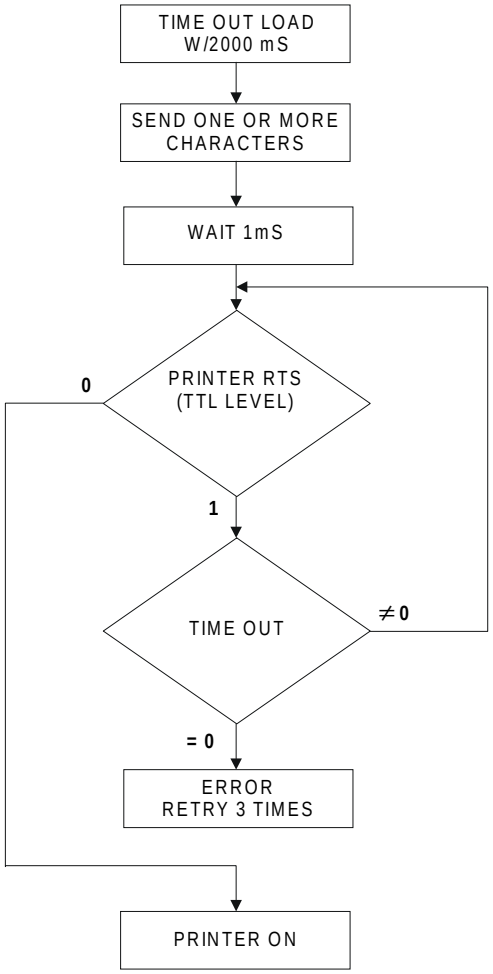
- by briefly pressing the multi-function key
- by sending the character ESC 0 over the serial line
- following a given period of inactivity as specified in setup (see sec. 1.3)

(1) **NOTE**
If the printer is connected to the battery recharger and it recharging the batteries it's not possible to turn off the printer. It must wait that the operation in terminated.

Turning the printer On and Off using software commands

If the printer is off, sending a character over the serial line will turn it on (2). Follow the instructions shown in the diagram below:

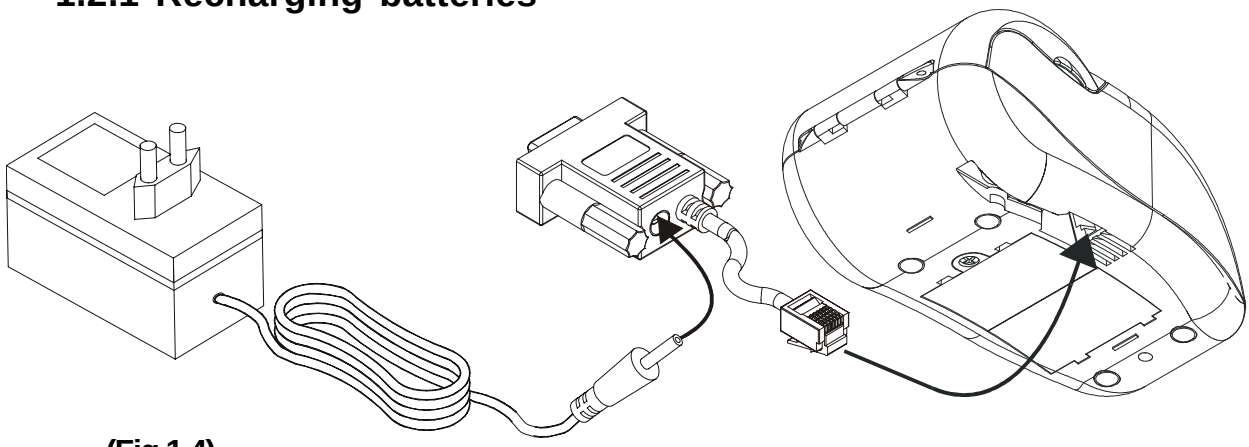
(2) **NOTE**
It's not possible to turn on the printer sending one or more characters through the infrared device.



(Fig.1.3)

1.2 BATTERIES

1.2.1 Recharging batteries



(Fig.1.4)

Appearing in the printer set up print out (see sec. 1.3) is the parameter HEAD VOLT that gives the battery charge level.
To recharge the batteries[3], use the cable packed with the printer and proceed as follows:

- connect the battery recharger jack to the cable jack (vedi fig. 1.4) and plug the battery recharger into the electrical mains;
- connect the cable RJ11 connector to the RJ11 connector located under the printer (see fig. 1.4). For a complete recharge, we recommend that the batteries be left to charge for two hours;

[3] NOTE
During the recharge operation it's not possible turning the printer off.

WARNING
Incorrect battery recharge voltage (different from that given in tab. 1.2) could seriously damage the printer.

Tables 1.1 and 1.2 provide specifications for the battery recharger

PIN	SIGNAL	IN / OUT	DESCRIPTION
1	+ VRIC	POWER	Battery recharge
2	GND	POWER	Ground signal

(Tab.1.1)

Max recharge current	0.6 A
Max recharge voltage	12V - 36V

(Tab.1.2)

1.2.2 Information regarding battery use

- Please note that the new NiMH battery reaches maximum performance levels only after having been completely discharged and recharged at least two or three times.
- Never use battery rechargers and/or batteries that are damaged or worn.
- Battery life varies greatly depending, for example, on print density and the text to be printed.
- Recharge times vary depending on depletion levels, type of battery and battery recharger used. Batteries may be recharged and discharged hundreds of times, but they do wear out over time. When battery life (both print and stand-by) is noticeably shorter than usual, it is time to buy a new battery.
- Only utilize batteries that conform to specifications and only recharge them using battery rechargers approved by CUSTOM ENGINEERING SPA.
- When the battery recharger is not in use, unplug it from the electrical mains. If not used, even a completely-charged battery will automatically discharge over time.
- NiMH batteries last longer if you remember to completely discharge them every so often.
- Extreme temperatures can affect battery charge levels—leave them to cool or warm as required.

1.2.3 Replacing batteries

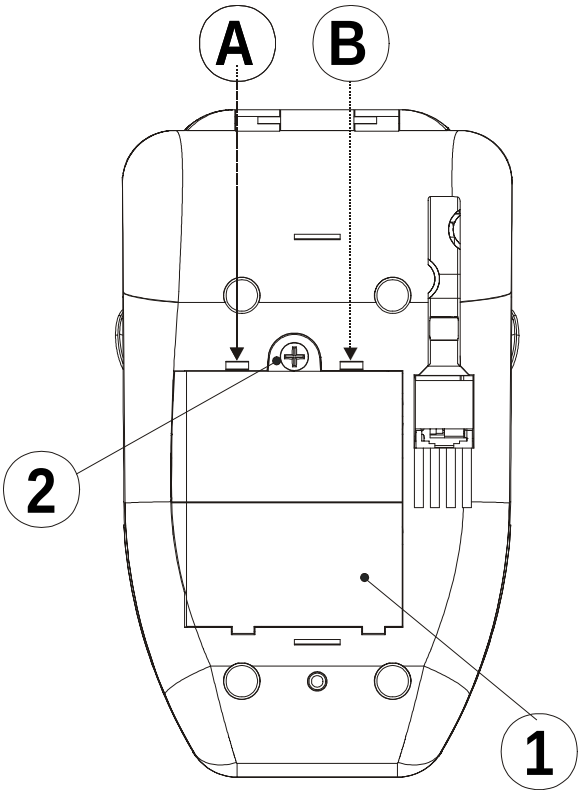
Instead of the rechargeable battery pack supplied with the printer, 5 AA ALKALINE penlight batteries may be used[4][5].

[4] ***Note:*** *if batteries other than those supplied with the printer are used, the Battery parameter in setup must modified and the settings changed to Alkaline if Alkaline batteries are used, or the to closest reference value for other types of batteries (see sec. 1.3).*

[5] ***Note:*** *if Alkaline batteries are used it doesn't make the recharge.*

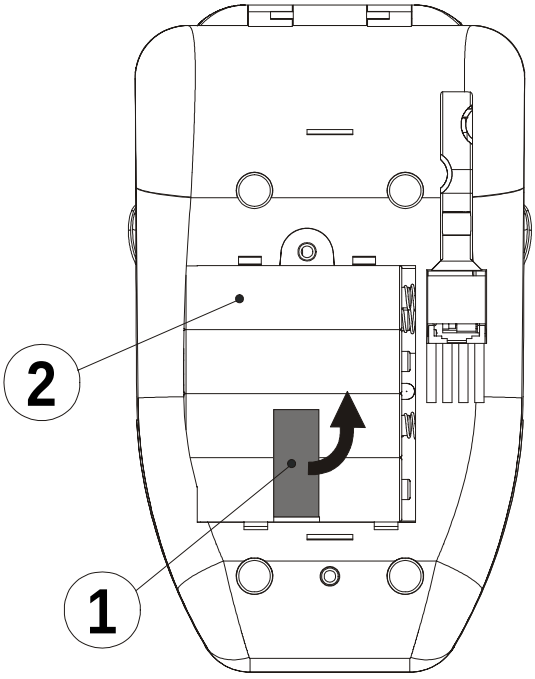
To replace batteries, proceed as follows:

- remove the cover on the battery compartment (1) by unscrewing the screws (2) and, using a flat-head screwdriver, pry open at points A and B (see fig.1.5).



(Fig.1.5)

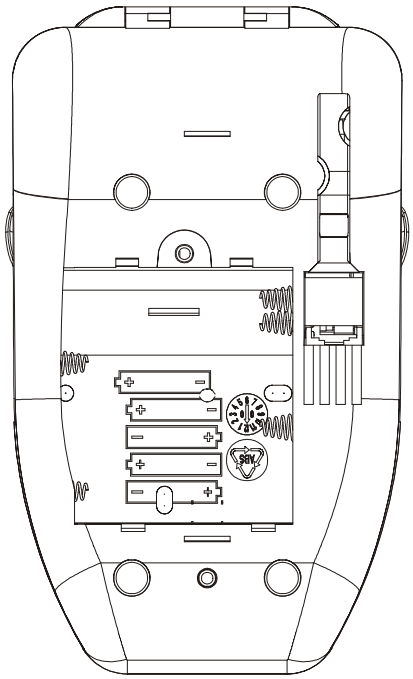
- remove the battery pack (2) by lifting the battery removal tape (1) (see fig. 1.6).



(Fig.1.6)

- insert the 5 batteries[7] inside the compartment following the layout indicated in fig. 1.7 and re-position the battery removal tape;

[7] ***Note:*** *when inserting the batteries, make sure the + and – signs are positioned correctly.*



(Fig.1.7)

- reclose the battery compartment by tightening the fastening screws.

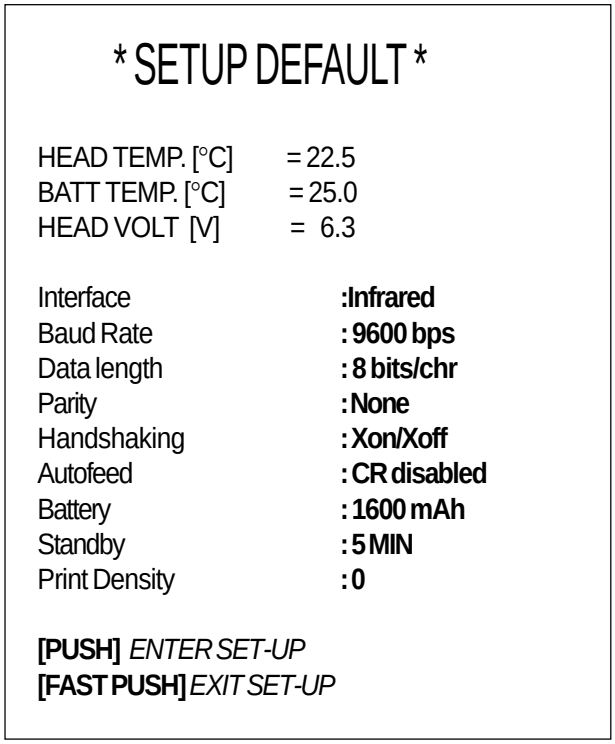
1.2.4 Disposing of batteries

- Batteries must be recycled or disposed of properly. Do not throw batteries away as part of normal refuse disposal.
- Do no throw batteries into open flame!

(Fig.1.8)

1.3 CONFIGURATION

The printer set up print out (see fig. 1.9) includes a range of information, and among these should be pointed out the HEAD VOLT parameter that indicates the battery charge level, i.e., the print head battery voltage.


* SETUP DEFAULT *
HEAD TEMP. [°C] = 22.5
BATT TEMP. [°C] = 25.0
HEAD VOLT [V] = 6.3
Interface :Infrared
Baud Rate : 9600 bps
Data length : 8 bits/chr
Parity : None
Handshaking : Xon/Xoff
Autofeed : CR disabled
Battery : 1600 mAh
Standby : 5 MIN
Print Density : 0
[PUSH] ENTER SET-UP
[FAST PUSH] EXIT SET-UP

(Fig.1.9)

The printer's configurable parameters are:

- **Interface:** RS232*D*, Infrared(7).
- **Baud Rate:** 38400, 19200, 9600*D*, 4800, 2400, 1200, 600.
- **Data length:** 7, 8*D* bits/car.
- **Parity:** None*D*, even or odd.
- **Handshaking:** XON/XOFF*D* or Hardware(8).
- **Autofeed:** CR deactivated*D* or CR activated.
- **Battery:** 600 mAh, 800 mAh, 1000 mAh, 1200 mAh*D*, 1400 mAh, 1600 mAh, Alkaline(9).
- **Standby:** 30 sec, 1min, 2 min, 5min*D*, 10 min, 20 min(10).
- **Print density:** -2, -1, 0*D*, +1, +2.

Please note: the parameters marked with the symbol *D* represent the default values.

(7) Note

If the Interface parameter is set in infrared and flow control is required, any time a transmission is effected a time break of one time and a half the byte transmission is needed (for example 1.5 msec at 9600 bps). The reason is for Half Duplex type of infrared line communication. As a result the Busy condition check must be waited when transmitting data to the printer.
If said condition would slow down print-out, it is alternatively possible to transmit the bytes to be printed in fixed length blocks (for example 16 bytes at a time) and to wait for the necessary time to receive a likely XON/XOFF.

(8) Note

It is not possible to modify the "flow control" parameter if interface is set in infrared because it is automatically set in XON/XOFF.

(9) Note

This parameter regulates battery recharge time. If set to Alkaline, battery recharge is disabled. If another type of battery other than those supplied with the printer is used, select the closest appropriate charge value from the list.

(10) Note

This parameter regulates the period of inactivity after which the printer shuts off automatically to avoid battery discharge.

Each time the key is pressed quickly, the parameter will change and the current value will be printed out. Once the desired value has been attained, hold the key down for at least a second to pass to the next parameter, and so on. Printing out of a new printer set up report indicates that set up is complete.

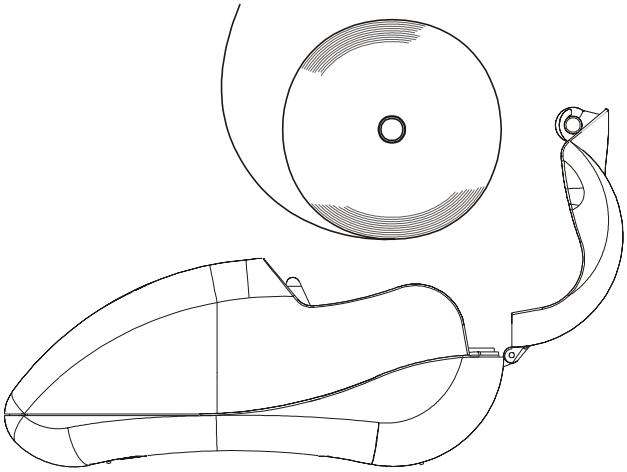
1.4 HEXADECIMAL DUMP

This function is used to display the characters received from the communications port; after the reception of each 10 characters from the communications port, the printer prints out both the hexadecimal code received as well as the corresponding ASCII code.
Shown below is an example of a Hexadecimal Dump:

```
48 65 78 61 64 65          Hexade
63 69 6D 61 6C 20          cimal
64 75 6D 70 20 66          dump  f
75 6E 63 74 69 6F          unctio
6E 20 30 31 32 33          n 0123
34 35 36 37 38 39          456789
61 62 63 64 65 66          abcdef
67 68 69 6A 6B 6C          ghijkl
6D 6E 6F 70 71 72          mnopqr
73 74 75 76 77 78          stuvwx
79 7A                      yz
```

1.5 SIXLOAD

The printer has been designed with an **easy paper load** system to improve handling and simplify use.
This easy paper loading system is called "**sixload**" because when the paper is loaded into the printer, it looks like the number "6" (the roll on the bottom with the edge lifted).



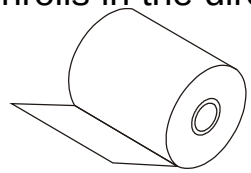
(Fig.1.10)

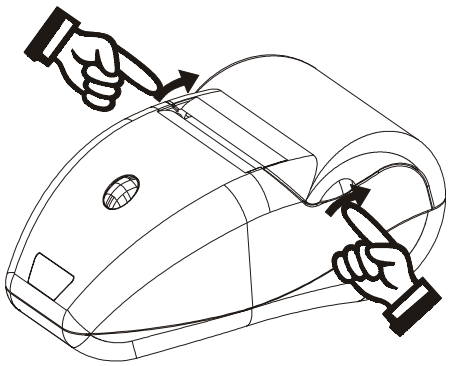
1.6 MAINTENANCE

1.6.1 Changing the paper roll

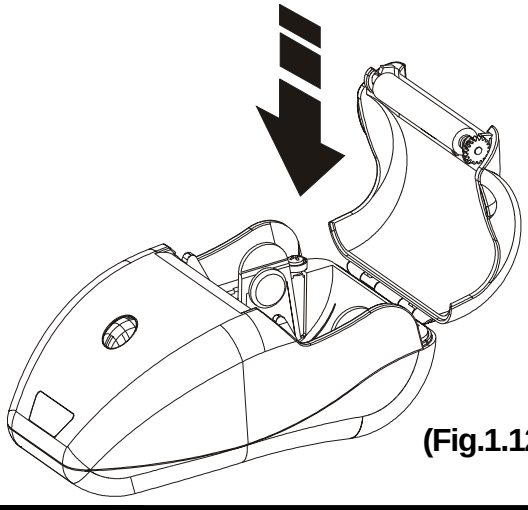
To change the roll of paper, proceed as follows:

1) Open the printer cover (see fig. 1.11) levering on the cover lateral projections and position the paper roll so that it unrolls in the direction shown in figure 1.12;



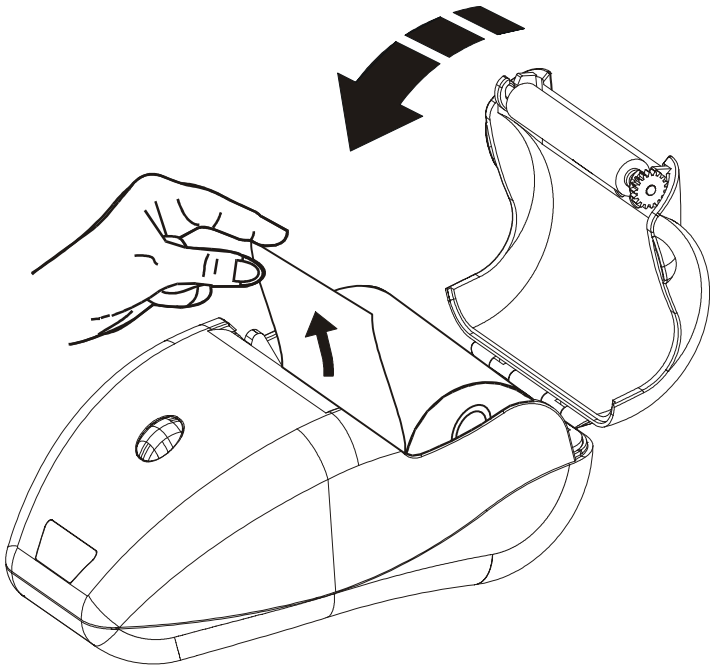


(Fig.1.11)



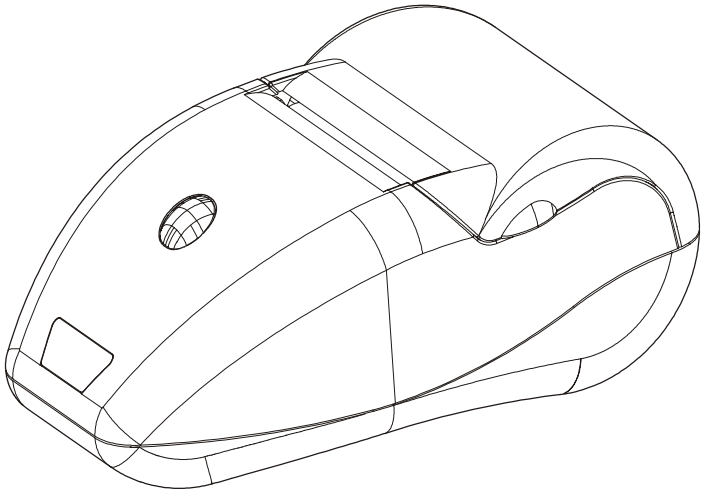
(Fig.1.12)

2) Pull up on the edge of the paper and close the cover (fig. 1.13);



(Fig.1.13)

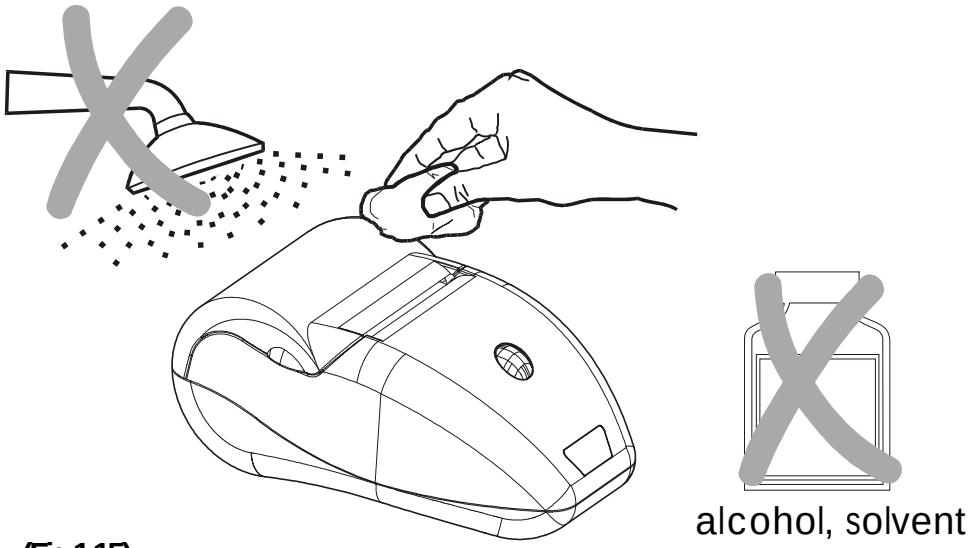
3) Tear off the paper. The printer is now ready (fig.1.14).



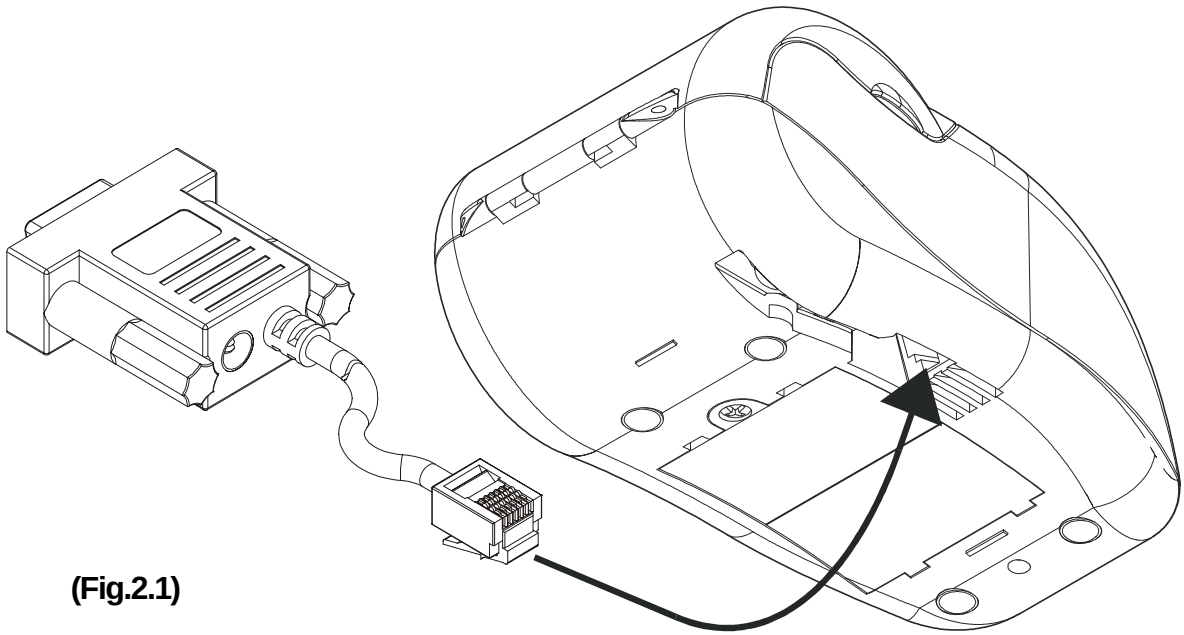
(Fig.1.14)

1.6.2 Cleaning

To clean the printer, use a vacuum cleaner or soft cloth.
Before cleaning the printer, unplug its electrical cord and make sure that the printer is off.
Do not use alcohol, solvents or hard-bristled brushes.
Do not let water or other liquids seep into the printer.



(Fig.1.15)

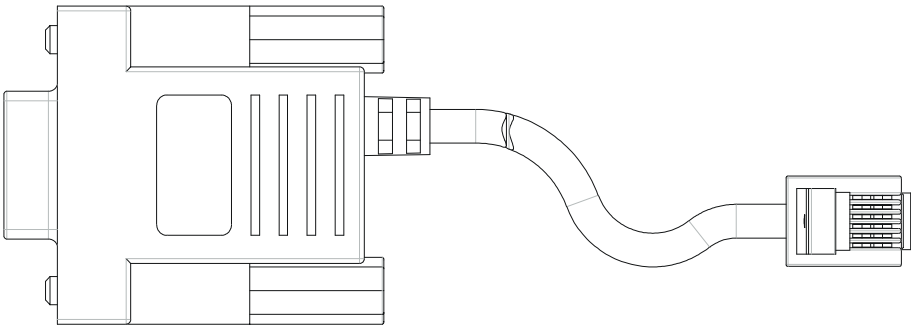


(Fig.2.1)

2.1 RS232 SERIAL

The printer is equipped with an RS232 serial interface with RJ11 connector (fig. 2.1) located underneath the printer. For serial connection, a connecting cable (fig. 2.2) with double connection system is packed with the printer. On one side is a 9-pin female connector (fig. 2.2A) to connect to the serial port; on the other side of the same connector is a RJ11 connector (fig. 2.2.B). For the layout of signals on the connectors, please refer to tables 2.1 and 2.2.

(Fig.2.2.A)



(Fig.2.2.B)

RJ11 connector DPT100 (fig. 2.1)

(Tab.2.1)

PIN	SIGNAL	IN/OUT	A	DESCRIPTION
1	+VRIC	IN	-	Battery recharge voltage
2	GND	-	GND	Ground signal
3	RX	IN	TXD	Receive data
4	TX	OUT	RXD	Transmit data
5	RTS	OUT	CTS	Ready to send / Ready to receive data
6	GND	-	GND	Ground signal

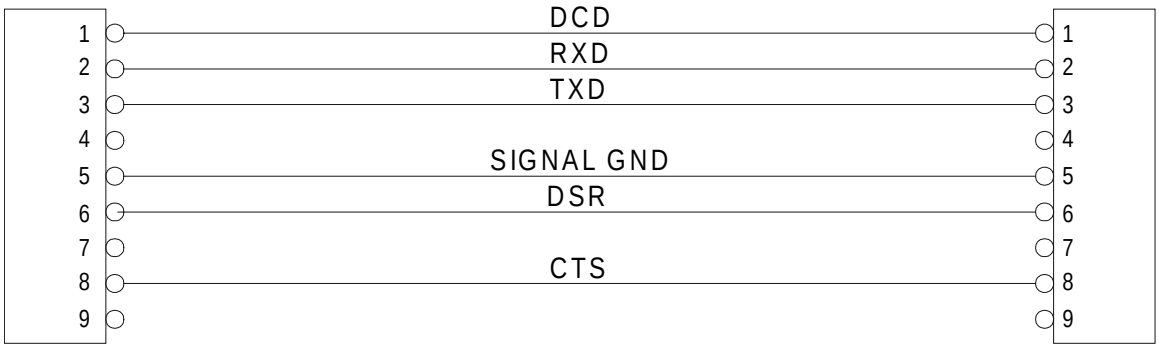
9-pin female connector (fig. 2.2.A)

(Tab.2.2)

PIN	SIGNAL	IN/OUT	A	DESCRIPTION
1	DCD	OUT	DCD	Data carrier identification. Printer On (active at RS232 high)
2	TXD	OUT	RXD	Transmit data. Serial output (from host)
3	RXD	IN	TXD	Receive data. Serial data input (to host)
4	N.C.	-	N.C.	Not connected
5	GND	-	GND	Ground signal
6	DSR	OUT	DSR	Data set ready. Printer ON and operating (active at RS232 high)
7	N.C.	-	N.C.	Not connected
8	RTS	OUT	CTS	Ready to send / Ready to receive data (active at RS232 high)
9	N.C.	-	N.C.	Not connected

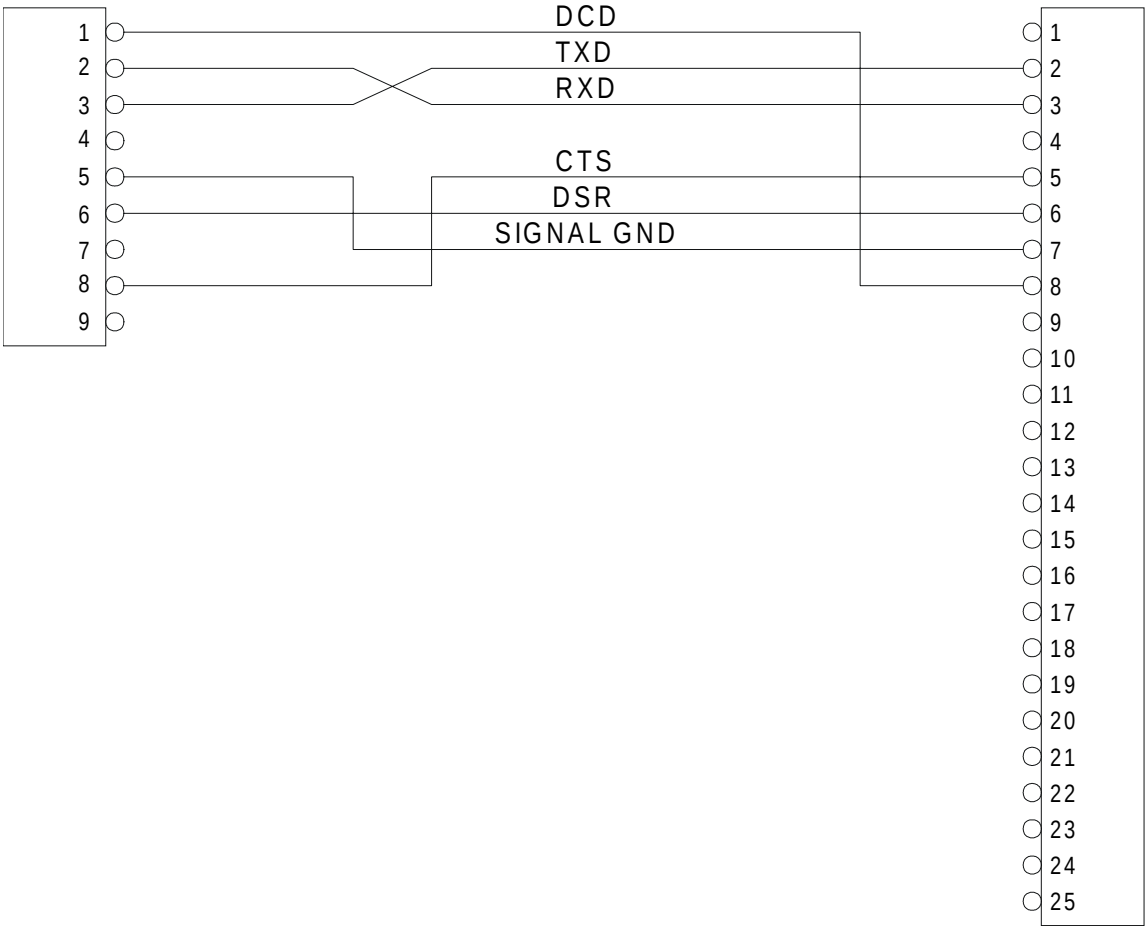
The diagrams below show a sample connection between printer and Personal Computer using a 9- and 25-pin female connector.

(Fig.2.2)



9-pin connector (*s'print* cable) **PC**

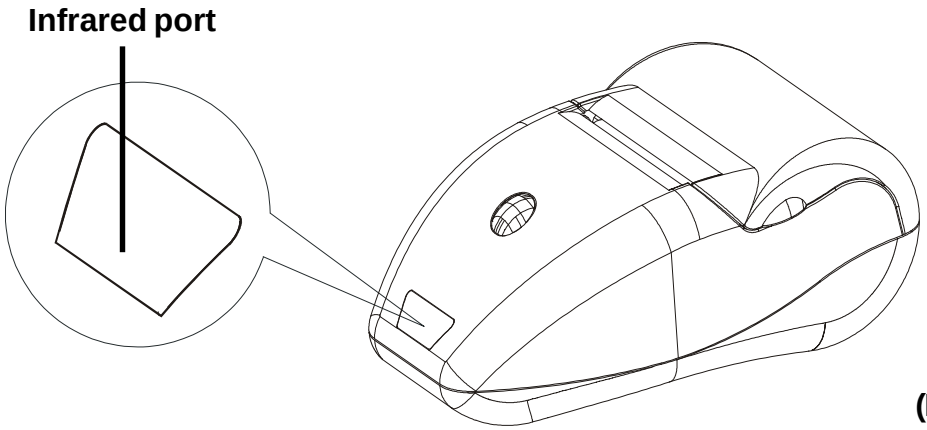
(Fig.2.3)



9-pin connector (*s'print* cable) **PC**

2.2 INFRARED BIDIRECTIONAL SERIAL

The printer has a serial interface for bidirectional data exchange. The infrared port is centered on the lower part of the front (see fig. 2.4).



(Fig.2.4)

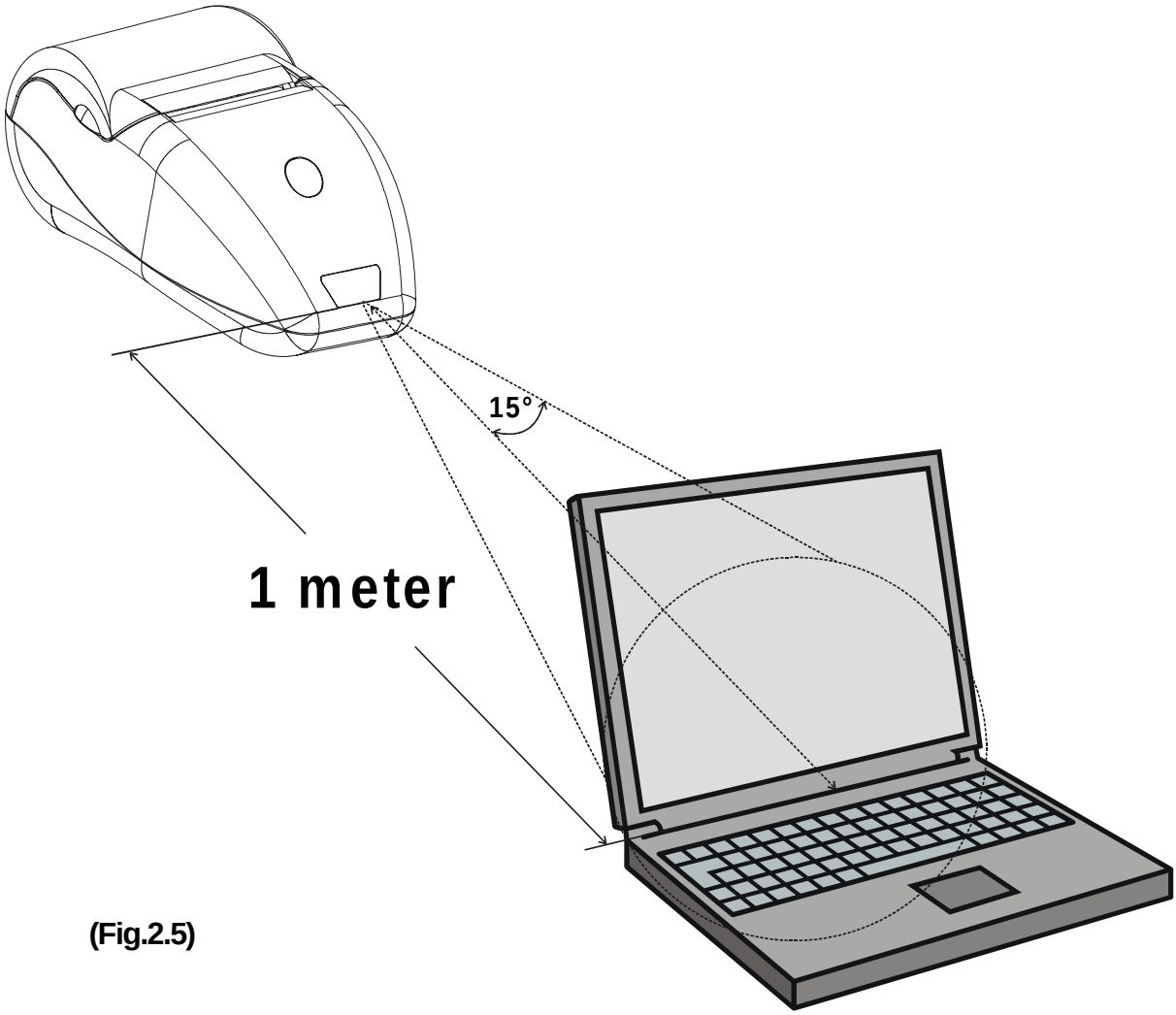
2.2.1 Printing instructions

1) Set the infrared port with “infrared interface” parameter starting from the printer setup. Execute the ESC 02 (ESC STX) command to enable the port [(1)].
   Warning: Close down infrared channel with ESC 03 command just after data transmission.

[(1)] NOTE
The led is always switched on (not flashing) when using infrared port.

2) To use the printer’s infrared port, a computer or Personal Digital Assistant (PDA) with IR port is required.

3) Position a computer conforming to the specifications in point 1) not more than a meter away from the printer’s infrared port. Make sure the two ports are in front of each other with an angle of not more than 15° on the fou sides. Send the print command from the computer (see fig.2.5).



(Fig.2.5)

3.1 CONTROL CHARACTERS

The command table lists all the commands for the management of the printer functions. These commands can be transmitted to the printer with the serial interface. The commands can be transmitted to the printer at any moment, but they will only be carried out when the characters previously transmitted have been printed or the commands previously transmitted have been carried out. There are no commands with priority status; all the commands are carried out when the circular buffer is free to do so.

(Tab.3.1) **COMMAND TABLE**

ASCII Com.	HEX Com.	Description
	$00	Prints in small characters
	$01	Prints in double width
	$02	Prints in double height
	$03	Expanded printing
	$04	Restores small character printing
	$07	Cancel print data buffer
	$0A	Forward feeds one line
	(n) $0B	Forward feeds (n) line
	$0D	Prints line buffer
	$0F	Sets CRLF mode
	$11	Graphic mode
ESC (STX)	$1B $02	Enable infrared port
ESC (ETX)	$1B $03	Close down the communication with infrared port
ESC # n	$1B $23 n	Transmit printer ID
ESC 0	$1B $30	Turning the printer off
ESC @	$1B $40	Resets the printer
ESC A	$1B $41	Executes [n] dots line feed
(dd) ESC M	(dd) $1B $4D	Writes value (dd) in print mode
ESC N	$1B $4E	Sets normal mode printing
ESC Q	$1B $51	Enables underlining

ASCII Com.	HEX Com.	Description
ESC R	$1B $52	Sets reverse mode printing
ESC W	$1B $57	Prints graphic line of 200 dpi
(dd) ESC a	$1B $61	Selects number of dot spaces
ESC c	$1B $63	Management of bar code printing
ESC m	$1B $6D	Transmits print mode in serial
ESC q	$1B $71	Disables underlining
ESC s	$1B $73	Transmits next character in serial
ESC v	$1B $76	Transmits a printer status
ESC · n1 n2	$1B $FA n1 n2	Print graphic
GS $ n	$1D $24 n	Set absolute shift into a graphic line
GS I n	$1D $49 n	Transmits the printer ID
GS U	$1D $55	Resets printer parameters to default value
GS W n	$1D $57 n	Prints n byte of a 200 dpi graphic line

The following pages provide a more detailed description of each command.

00H

[Name] **Small character printing**

[Format] ASCII -

Hex 00

Decimal 0

[Description] The printer prints in small characters (normal)

[Notes] • The commands 00H - 09H do not cancel the print buffer

• The commands which modify the direction of the characters are only active at the beginning of the line

[Default] Setting in option register by means of front keys

[Reference] **01H, 02H, 03H, 04H**

[Example]

01H

[Name] **Double width printing**

[Format] ASCII -

	Hex	01
	Decimal	1
[Description]	The printer prints in double width format	
[Notes]	• The commands 00H - 09H do not cancel the print buffer	
	• The commands which modify the direction of the characters are only active at the beginning of the line	
[Default]	Setting in option register by means of front keys	
[Reference]	**00H, 02H, 03H, 04H**	
[Example]		

02H

[Name]	**Double height printing**	
[Format]	ASCII	-
	Hex	02
	Decimal	2
[Description]	The printer prints in double height format	
[Notes]	• The commands 00H - 09H do not cancel the print buffer	
	• The commands which modify the direction of the characters are only active at the beginning of the line	
[Default]	Setting in option register by means of front keys	
[Reference]	00H, 01H, 03H, 04H	
[Example]		

03H

[Name]	**Expanded printing**	
[Format]	ASCII	-
	Hex	03
	Decimal	3
[Description]	The printer prints in expanded character mode	
[Notes]	• commands 00H-09H do not cancel the print buffer	
	• the commands which modify the dimensions of the characters are only active at the beginning of the line	
[Default]	Setting in the option register by means of the front keys	
[Reference]	**00H, 01H, 02H, 04H**	
[Example]		

04H

[Name] **Restore small character printing**

[Format] ASCII -
Hex 04
Decimal 4

[Description] The printer resumes printing with small characters

[Notes] • The commands 00H-09H do not cancel the print buffer
• the commands which modify the dimensions of the characters are only active at the beginning of the line

[Default] Setting in the option register by means of the front keys

[Reference] **00H, 01H, 02H, 03H**

[Example]

07H

[Name] **Cancel print data buffer**

[Format] ASCII -
Hex 07
Decimal 7

[Description] Deletes all the print data in the current print buffer.

[Notes] • If data that existed in the previously specified printing area also exists in the currently specified printing area, it is deleted.

[Default]

[Reference]

[Example]

0AH

[Name] **Forward feeds one line**

[Format] ASCII -
Hex 0A
Decimal 10

[Description] Forward feeds one line equivalent to a line of print

[Notes] • This command brings about the printing of the contents of the line buffer

[Default]

[Reference] **0BH**

[Example]

(n) 0BH

[Name] **Forward feeds (n) lines**

[Format] ASCII -
Hex 0B
Decimal 11

[Description] Carries out the number of line feeds specified in (n)

[Notes] •The number must be ASCII and between 0 and 9 (when n=0 the command is ignored)
• This command clears the line buffer

[Default]

[Reference] **0AH**

[Example] To forward feed fast, 5 lines at a time:
$35 $0B (or 5 and the command $0B)

0DH

[Name] **Print the line buffer**

[Format] ASCII -
Hex 0D
Decimal 13

[Description] This command prints the line buffer

[Notes] • If the line buffer is empty, the command is ignored
• If the CRLF option is set, this command is ignored and printing can only be ordered through the command $0A

[Default]

[Reference] **0FH**

[Example]

0FH

[Name] **Set CRLF mode**

[Format] ASCII -
Hex 0F
Decimal 15

[Description] Inhibits the command $0D maintaining enabled only the command $0A for printing

[Notes]
- To disable this option, reset the printer
- This command clears the line buffer
- On switching on the default value is in the Option Register

[Default] Setting in the option register by means of the front keys

[Reference] **0DH**

[Example]

11H

[Name] **Graphic mode**

[Format] ASCII -
Hex 11
Decimal 17

[Description] Enables graphic mode:

a line in 24 column mode corresponds to 144 horizontal dots divided into 24 blocks of 6 dots each; a line in 40 column mode corresponds to 240 horizontal dots divided into 40 blocks of 6 dots each.

[Notes] To obtain graphic printing, enter the command $11 at the beginning of each line. The format of the byte in graphic configuration is:

X	**R**	**P6**	**P5**	**P4**	**P3**	**P2**	**P1**
D7	D6	D5	D4	D3	D2	D1	D0

where:

X is not used (0 is recommended);

R must be fixed at level 1;

P1,.P6 are the graphic dot data (1 prints, 0 does not print).

The P6 bit of the string of dots transmitted is printed on the left and the others follow from left to right (P5, P4, P3, P2,

P1) as shown:

1st byte ➔	2nd byte ➔	3rd byte ➔
P6 P5 P4 P3 P2 P1	P6 P5 P4 P3 P2 P1	P6 P5 P4 P3 P2 P1

[Default]

[Reference]

[Example] To print a line of dots, transmit:

$11, n x $7F (where n is the number of characters per line), $0D.

To print an empty line, transmit:

$11, $40, $0D.

ESC (STX)

[Name] **Enable infrared port**

[Format]

ASCII	ESC	(STX)
Hex	1B	02
Decimal	27	2

[Description] Enable infrared port.

[Notes]
- if the printer doesn't receive this command all data sent to infrared port are ignored.
- After receiving this command the infrared led is always switched on.

[Default]

[Reference] ESC (ETX)

[Example]

ESC (ETX)

[Name] **Close down the communication with infrared port**

[Format]

ASCII	ESC	(ETX)
Hex	1B	03
Decimal	27	3

[Description] Close down the communication with the infrared port .

[Notes]
- The command is active only if the infrared communication channel has been enabled by the ESC STX command.

• After the command execution the printer ignores all the characters received from the communication port until to the next ESC STX reception.

• After receiving this command the infrared led is functioning, as usual.

[Default]

[Reference] ESC (STX)

[Example]

ESC # n

[Name] **Transmit printer ID**

[Format]

ASCII	ESC	#	n
Hex	1B	23	n
Decimal	27	73	n

[Range] $1 \le n \le 3, 49 \le n \le 51$

[Description] Transmits the printer ID specified by *n* follows:

	Printer ID	Specification
1, 49	Printer model ID	50H
2, 50	Not used	Fixed to Off
3, 51	ROM version ID	Depends on ROM version (4 character)

[Notes] • This command is executed when the data is processed in the data buffer. Therefore, there could be a time lag between command reception and data transmission, depending on data buffer status.

[Default]

[Reference]

[Example]

ESC 0

[Name] **Turning the printer off**

[Format]

ASCII	ESC	0
Hex	1B	30
Decimale	27	48

[Description] Turning the printer off.

[Notes]

[Default]

[Reference]

[Example]

ESC @

[Name] **Resets the printer**

[Format]

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

[Description] Cancels all the data in the print buffer and resets the printer mode, restoring the mode which was enabled at the moment of switching on

[Notes]
- Same as hardware reset
- After the command has been transmitted, 1.5 seconds elapse before the printer is enabled

[Default]

[Reference]

[Example] This can be useful during switching on in order to avoid the sending of false characters during initialization by the master device

ESC A [nH] [nL]

[Name] **Executes [n] dots line feed**

[Format]

ASCII	ESC	A	nH	nL
Hex	1B	41	nH	nL
Decimal	27	65	nH	nL

[Description] Executes [n] dots line feed.

[Notes]
[Default]
[Reference]
[Example]

(dd) ESC M

[Name] **Writes the value (dd) in the print mode**

[Format]

ASCII	dH	dL	ESC	M
Hex	dH	dL	1B	4D
Decimal	dH	dL	27	77

[Description] Sets the print mode default parameters:
$00 small character printing
$01 double width printing
$02 double height printing
$03 expanded printing

[Notes] • The setting is stored in the EEPROM

[Default] Setting by means of the front keys

[Reference] **ESC m**

[Example] For double height printing, transmit:
$30 $32 $1B $4D

ESC N

[Name] **Set normal mode printing**

[Format]

ASCII	ESC	N
Hex	1B	4E
Decimal	27	78

[Description] Select normal mode printing:the receipt feeds out of the printer with the printing upside down running from right to left

[Notes]

[Default] Setting in option register by means of front keys

[Reference] **ESC R**

[Example]

ESC Q

[Name] **Enable underlined printing**

[Format]

ASCII	ESC	Q
Hex	1B	51
Decimal	27	81

[Description] After this command has been received, the characters are printed underlined

[Note]

[Default]

[Reference] **ESC q**

[Example]

ESC R

[Name] **Set reverse mode printing**

[Format]

ASCII	ESC	R
Hex	1B	52
Decimal	27	82

[Description] Selects printing in reverse mode: the receipt feeds out of hte printer with the printing in normal mode running from left to right.

[Notes]

[Default] Setting in option register by means of front keys

[Reference] **ESC N**

[Example]

ESC W

[Name] **Prints a graphic line at 200 dpi**

[Format]

ASCII	ESC	W
Hex	1B	57
Decimal	27	87

[Description] After receiving this command, the printer waits for 48 bytes which correspond to an entire graphic line. In fact, 48 bytes of 8 bits each correspond to 384 dots per line.

[Notes]

[Default]
[Reference]
[Example]

(dd) ESC a

[Name] **Selects the number of dot spaces**

[Format]

ASCII	(dd)	ESC	a
Hex	(dd)	1B	61
Decimal	(dd)	27	97

[Description] (dd) are two ASCII characters which identify a hexadecimal byte and correspond to the number of dot lines between one print line and another

[Notes]
[Default] 0
[Reference]
[Example]

ESC c

[Name] **Management of bar code printing**

[Format]

ASCII	ESC	c	[code] [height] [position] [options] [length] [data]
Hex	1B	63	
Decimal	27	99	

[Description]

[ASCII code]	Type of bar code
I	Interleved 2/5
C	Code 39
B	CodaBar
e	EAN8
E	EAN13

[height]
Number of dot lines in 1/8 mm. units.

[position]

Left hand margin, expressed in 1/8 mm. units

[options]

bit	bit 0	bit 1
bit0: check digit	is not printed	is printed

bit3,2: HRI 0=no 1=above 2=below 3=above & below

bit5,4: size 0=normal 1=double 2=triple 3=quadruple

[maximum length]

Interleaved 2/5 = 12 characters
Code 39 = 10 characters
CodaBar = 10 characters
EAN8 = 8 characters
EAN13 = 13 characters

[data]

Expressed in ASCII

[Notes]
[Default]
[Reference]
[Example]

ESC m

[Name]	**Transmits the print mode in serial**		
[Format]	ASCII	ESC	m
	Hex	1B	6D
	Decimal	27	109

[Description] Transmits the print mode configuration on the serial port

[Notes] • If the printer is using the parallel protocol, nothing with be transmitted

[Default] Setting in the option register by means of the front keys

[Reference] **ESC B**

[Example] The response is on two bytes. E.g. if you receive:

$30, $32

it means that printing is in double height mode

ESC q

[Name] **Disables underlined printing**

[Format]

ASCII	ESC	q
Hex	1B	71
Decimal	27	113

[Description] Annuls underlined printing

[Notes]

[Default]

[Reference] **ESC Q**

[Example]

ESC s

[Name] **Transmits the next character in serial**

[Format]

ASCII	ESC	s
Hex	1B	73
Decimal	27	115

[Description] Transmits the next character it receives on the serial port

[Notes]

[Default]

[Reference]

[Example] If you transmit: ESC s A

the last character, A, will not be printed but immediately transmitted on the serial line

ESC · n1 n2

[Name] **Print graphic bank (384 ´ 85 dots).**

[Format]

ASCII	ESC	·	n1	n2
Hex 1B	FA	n1	n2	
Decimal 27	250	n1	n2	

[Range] 0 £ *n1*, *n2* £ 255

[Description] Prints the graphics bank from flash.

n1 specifies the starting dot line (1 ÷ 85).
n2 specifies the number of lines to print.

[Notes] • If n1 + n2 > 85 the printer only prints 85 - *n1* + 1 dotlines.

[Default]

[Reference]

[Example] To print the graphic bank from dotline 10 to dotline 40, send:
1BH FAH 0AH 1EH

ESC v

[Name] **Transmit paper sensor status**

[Format]

ASCII	ESC	v
Hex	1B	76
Decimal	27	118

[Description] When this command is received, transmit the current status of the paper sensor.

[Notes] • This command is executed immediately, even when the data buffer is full (Busy).
The status to be transmitted is shown in the table below:

Bit	Off/On	Hex	Decimal	Function
0,1	Off	00	0	Cover close, paper present
	On	03	3	Cover open or paper sensor not working
2,3	Off	00	0	Paper-end sensor: Paper present
	On	0C	12	Paper-end sensor: Paper not present
4	Off	00	0	Not used. Fixed to Off.
5	Off	00	0	Head temperature correct
	On	20	32	Head temperature error
6	Off	00	0	Battery voltage correct
	On	40	64	Battery voltage error
7	Off	00	0	Not used. Fixed to Off.

[Default]

[Reference]

[Example]

GS $ n

[Name] **Set absolute shift into a graphic line.**

[Format]

ASCII	GS	$	n
Hex	1D	24	n
Decimal	29	36	n

[Range] $0 \leq n \leq 47$

[Description] Set the print beginning position into a graphic line based on the current value of n that indicate the byte number of shift from left margin.

[Notes] • Settings outside the specified printable area are ignored.

[Default]

[Reference]

[Example]

GS I n

[Name] **Transmit printer ID.**

[Format]

ASCII	GS	I	n
Hex	1D	49	n
Decimal	29	73	n

[Range] $1 \leq n \leq 3, 49 \leq n \leq 51$

[Description] Transmits the printer ID specified by *n* follows:

	Printer ID	Specification
1, 49	Printer model ID	50H
2, 50	Not used	Fixed to Off
3, 51	ROM version ID	Depends on ROM version (4 character)

[Notes] • This command is executed when the data is processed in the data buffer. Therefore, there could be a time lag between command reception and data transmission, depending on data buffer status.

[Default]

[Reference]

[Example]

GS U

[Name] **Resets the printer parameters to default.**

[Format]

ASCII	GS	U
Hex	1D	55
Decimal	29	85

[Description] Resets the printer parameters to the default configuration.

[Notes] • After executing this command the printer is initialized.

[Default]

[Reference]

[Example]

GS W n d1 ...dn

[Name] **Prints n byte of a 200 dpi graphic line**

[Format]

ASCII	GS	W	n	d1...	dn
Hex	1D	57	n	d1...	dn
Decimal	29	87	n	d1...	dn

[Range] $1 \le n \le 48$

$0 \le d1 \ldots dn \le 255$

[Description] Print n byte of a 200 dpi graphic line where :

• n specifies the number of byte to print;

• d1...dn specify the bytes to print.

[Notes] • If the bit image data input exceeds the number of dots to be printed on a line, the excess data are processed as printable characters.

• *d* indicates the bit image data. Set a corresponding bit to 1 to print a dot, or to 0 to not print the dot.

• This command is not affected by the emphasized, double-strike, underline (etc.) print modes, except for the upside-down mode.

[Default]

[Reference]

[Example] For printing 12 bytes the command sequence is :
1D 57 0C FF 00 FF 00 FF 00 FF 00 FF 00 FF 00

4.1 TECHNICAL SPECIFICATIONS

Table 4.1 gives the main technical specifications of the printer.

(Tab.4.1)

Resolution	203 DPI (8 dot/mm)
Paper roll size	57.5 mm ± 1 mm
Sensors	Paper out
Print method	Thermal (8 dot/mm)
Print mode	Forward , reverse, 90°
Print styles	Normal, double height/width, reverse, underlines, expanded
Character fonts	1 (16 x 24 dot)
Communication interfaces available	RS232 / RS232 + Bidirectional infrared
Driver for Windows	95 / 98 / me / NT / W2K
Baud rate	600 to 38400 bps
Print buffer	128 bytes
Flash memory	32K
Graphics memory	1 logo of 384 x 85 dots
Print speed	up to 50 mm/sec (2)
Power suply	12-36 VDC / 0.6A (Battery recharger)
Batteries	5 AA penlight (NI-MH/NI-CD/ALKALINE)
Battery life (1)	100 mt. of paper
Autonomy (hours)	
Print (1)	1h 40 min.
Electrical input	
Print (1)	925 mA
Environmental conditions	
Operating temperature	0 °C ÷ 50 °C
Relative humidity	10-85 %Rh without condensing
Storage temperature / humidity	-20 °C ÷ +70 °C / 10 %Rh ÷ 90 %Rh
Dimensions	145.96mm x 88.18mm x 64.61mm
Weight	370 gr. (without paper roll)

Note : (1) STANDARD CUSTOM receipt and 1300 mAh battery.
(2) It depends by the battery status, the printing typology and the environment temperature.

(Tab.4.2)

ESC/POS™ EMULATION	
57 mm paper	**12.7 cpi**
Number of columns	24, 40 (3)
Characters (L x H mm)	
Normal	2 x 3
Double height	2 x 6
Double width	4 x 3
Double height and width	4 x 6

Bidirectional infrared port specifications	
Operating distance	up to 1mt.
Wave length	800-900 nm

(3)**NOTE**
The 40 column version is downloadable on the Support/Download/ Firmware section from www.custom.it web site.

LED safety

The infrared port on the front of the printer conforms to Class 1 for LED devices (light-emitting diode), on the basis of international standard IEC 825-1 (EN 60825-1). This device is not considered harmful, but the following precautions should be observed:

- avoid direct exposure of eyes to infrared LED rays;
- remember that infrared rays are not visible;
- do not attempt to observe infrared LED rays with any type of optical aid.

4.2 ADAPTOR SPECIFICATIONS

220Vac Adaptor

(Tab.4.3)

Input specifications	
Input voltage	230 Vac
Input frequence	50 Hz

Output specifications	
Output voltage	18 Vdc

120Vac Adaptor

(Tab.4.4)

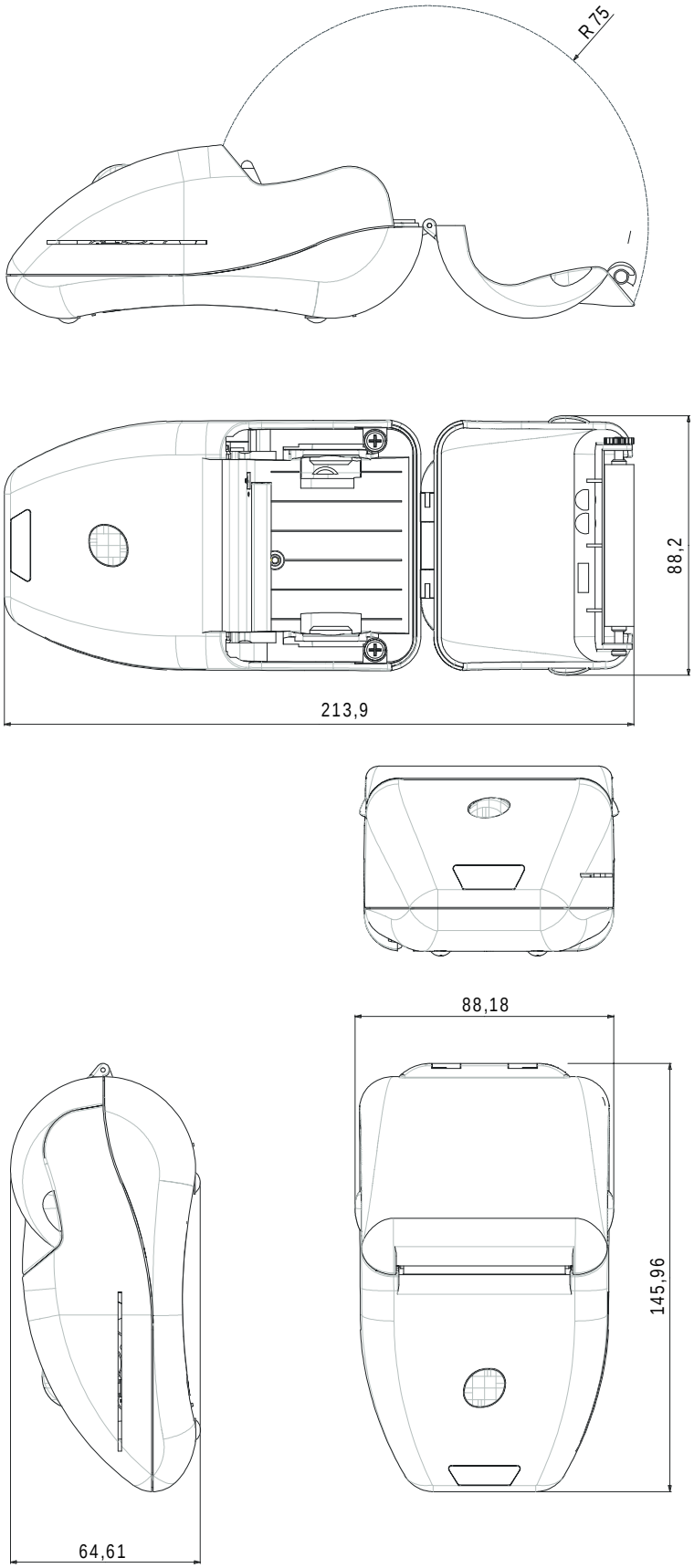
Input specifications	
Input voltage	230 Vac
Input frequence	50 Hz

Output specifications	
Output voltage	18 Vdc

4.3 DIMENSIONS

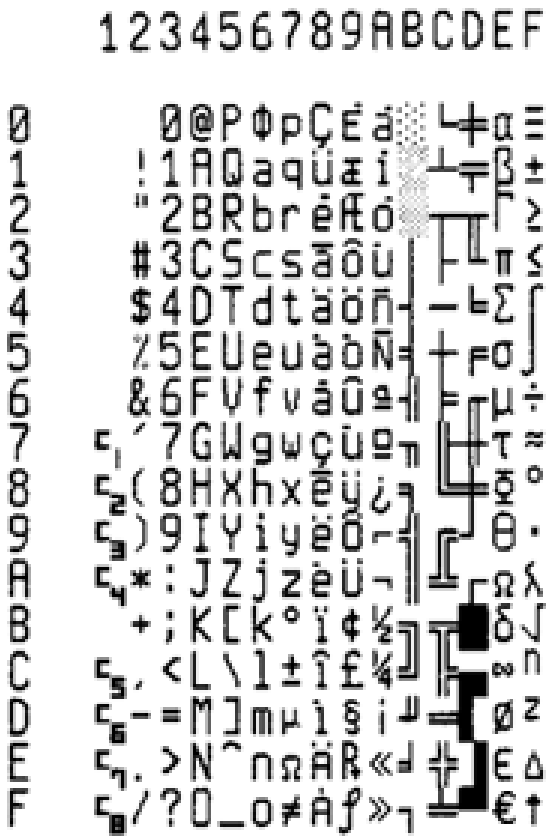
Printer dimensions are shown below.

(Fig.4.1)



5.1 CHARACTER SETS

The printer has a 224-character font, a print-out of which is shown below.

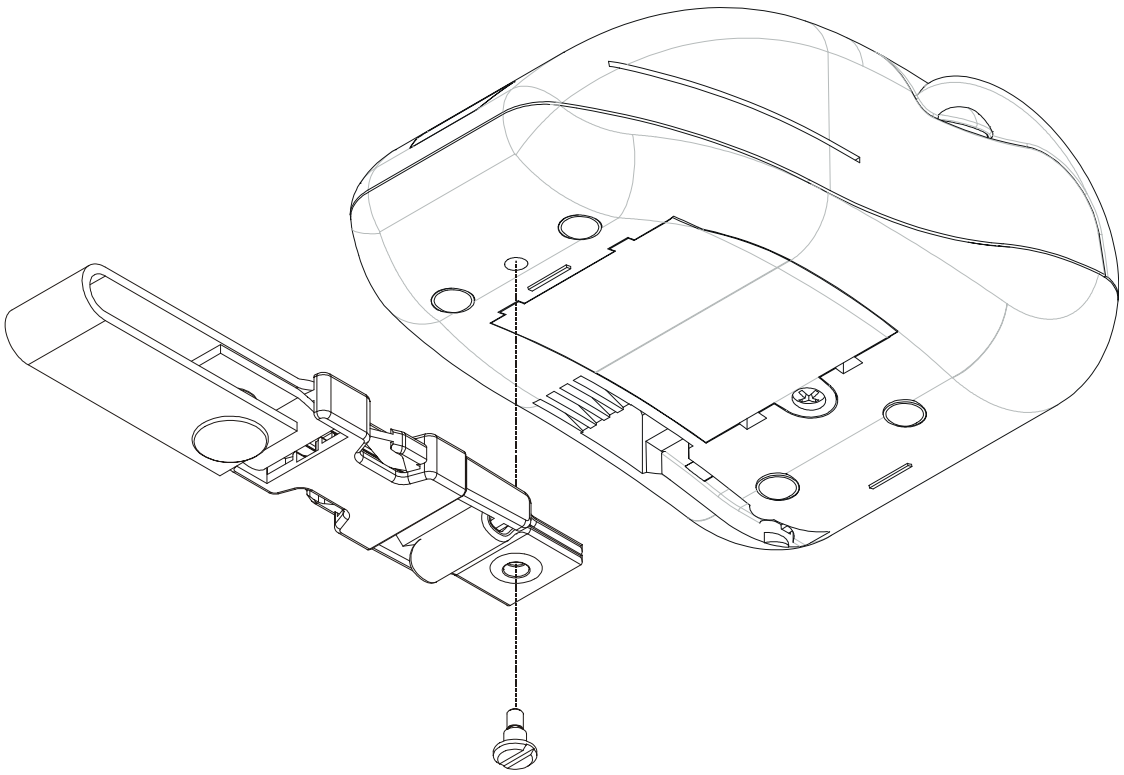


(Fig.5.1)

A.1 ACCESSORIES

A.1.1 Belt coupler

In the ***s'print***-B battery model, there is a support kit available for the printer that consists of a belt and fastening screws. The figure below illustrates how the belt coupler is attached underneath the printer.



(Fig.A.1)

A.2 SPARE PARTS

(Tab.A.2)

RCT57X50	**Roll of thermal paper**
BTNIMH-1.2W-1300MAH	**NICKEL-CADIUM** AA batteries
PCALI-DP-E	**Adapter/battery recharger**
CB9POLI-PLUG8	**Serial cable**
VAGANCIO-CINT	**Belt loop coupler**
VACUSTODIA-CINT	**case for belt** *s'print*